Vol. LXXXII, No. Fairbanks Daily News-Miner December 15, 1984

UA photos show Soviets break ice for missiles

By SAM BISHOP
Staff Writer

A satellite photograph taken by the University of Alaska's Geophysical Institute indicates that the Soviet Union has developed the ability to fire missiles from submarines underneath arctic ice.

An article in the this week's issue of Aviation Week and Space Technology states that unnamed U.S. analysts have confirmed that the picture taken March 28 by a Landsat 4 satellite shows a test of the new missile launching technique.

Geophysical Institute Director Juan Roederer said that the officials, presumably from the Department of Defense, believe a small circle of jet vapor photographed last March near Wrangel Island in the Arctic Ocean is evidence of the Soviet's ability to shoot missiles from under the ice.

The photograph was received from the Landsat 4 satellite through the Institute's Quick Look facility at the Gillmore Tracking Station just outside of Fairbanks, said John Miller, senior applications engineer with the Institute.

Quick Look and Landsat are civilian programs used to gather information on geology, forests, agriculture and other man-made features. The program is not used for military intelligence, Miller said. Occasionally photographs are made showing Soviet activities and the institute receives requests from the Department of Defense for copies, which are honored.

The photograph of the test site was on a routine scan, Roederer said.

"We are not the ones saying it was a missile test," Miller said.

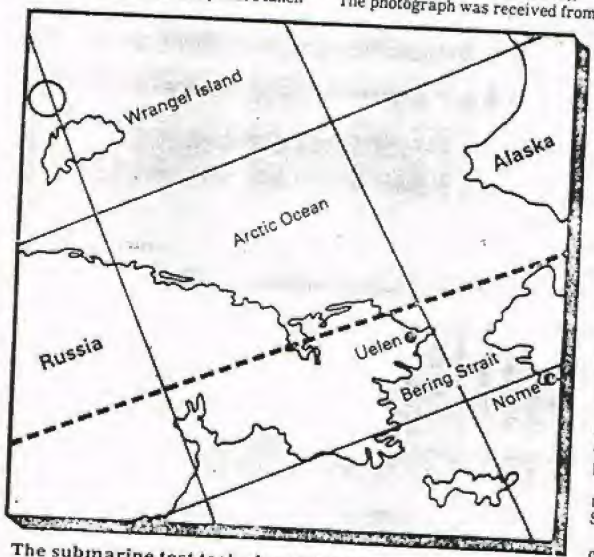
Department of Defense officials have not officially confirmed that the Aviation Week article is correct.

The article, written by Craig Covault, said the discovery is significant because submarines beneath arctic ice cannot be tracked or detected by ships, aircraft or submarine. Submarines traveling in open water are more vulnerable during war time, the article noted. The United States does not have the ability to fire missiles from underneath ice.

"Soviet ability to fire missiles through the ice is forcing a significant development effort by the defense department," the article said.

It went on to say that basing submarines under polar ice is part of the Soviet nuclear attack strategy.

The photograph shows several jet condensation trails near Wrangel Island, one of which circles an area in



The submarine test took place near Wrangel Island off the coast of Siberia.

(See MISSILE, page 3)

- over -

The circle in the left center of this satellite photograph, released by the University of Alaska Geophysical Institute's Quick Look project, is a condensation trail left by a jet flying at between 3,000 and 5,000 feet over the arctic sea ice near the Soviet Union's Wrangel Island. The darker center is broken ice, which analysts believe indicates the presence of a submarine testing a new missile launching technique from underneath the ice.

MISSILE . . .

(Continued from page 1)

which the ice surface is apparently disrupted, Miller said.

"It just looks different, you can see that," he said. "It's kind of pimply."

Aviation Week said the disfigured ice is probably the result of ice breaking machinery on a submarine. To . . a missile, the ice would be broken and a temporary but relatively undetectable missile launching platform would be formed, the article explained.

Roederer explained that because researchers knew the position of the satellite and the position of the sun, they could use the shadow lengths and a simple trigonometric calculation to determine that the jets were flying between 3,000 and 5,000 feet above the surface.

Miller said that researchers at the nstitute using NASA's Gilmore racking station (now belonging to the Vational Oceanic and Atmospheric Administration) were unable to ex- in the circular jet trails when they howed up on television monitoring creens in March. Although the Insti- ute has no direct contact with the de- ense department to report interest- g finds, it was aware that Aviation Veek might know where to go with the nformation.

They sent the pictures to the maga- ne and within a few days received a all from defense officials, who asked the photographs be forwarded. .e institute did so and has not heard nything since, Miller said.

Roederer said the information was ot classified at any point.

"I don't think it makes much sense classify information from a satellite that anyone can use," Roederer said.

The only time Landsat photographs were classified was during the Falklands War between Argentina and Great Britain, Roederer said. That was understandable because it was a "war emergency," he said.

Roederer said that, from conversations he has had with Aviation Week writers, the analysis of the pictures may have been leaked from the Department of Defense for political purposes.

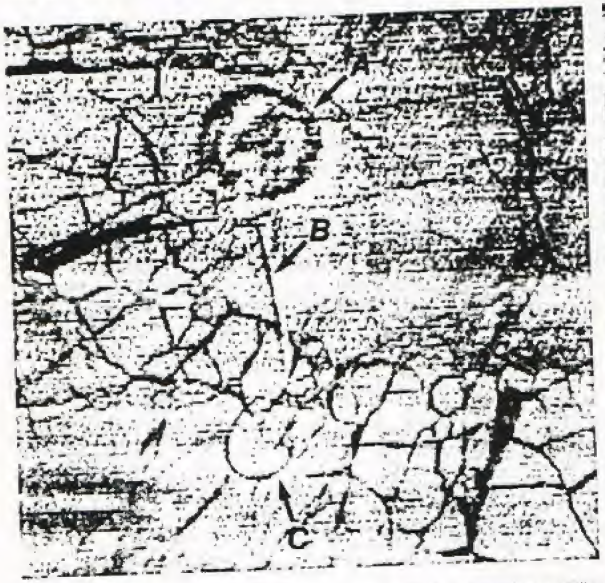
The development of under-ice missile launching ability in the Soviet Union may bring more sympathy to the defense department's positions.

Miller said it was interesting to note that Wrangel Island has been claimed as U.S. territory by several right-wing groups. The island was discovered by an American naval officer and several questionable homesteads may have been issued on it, he said. But he said there is little basis for territorial claims and he considers such statements far-fetched.

The Landsat Quick Look facility at the Institute has taken photographs of other interesting phenomenon in the Soviet arctic, Roederer said.

In October of 1983, Quick Look took pictures of the trails left by Soviet icebreakers rescuing ice-bound ships in the Chukchi Sea. Also, in February of 1983, the system detected large gaseous plumes, 3,000 to 5,000 feet high, near Bennett Island in the Soviet Arctic Ocean. The plumes are thought to be supercooled clouds of methane gas released from undersea permafrost beds, Roederer said.

Soviet Ability to Fire Through Ice Creates New SLBM Basing Mode



By Craig Covault

Washington—The Soviet Union has developed the ability to fire submarine-launched ballistic missiles through the Arctic ice cap. This new capability enables Soviet missile-firing submarines to escape detection by hiding under the north polar ice where the U. S. has little or no ability to detect and counter them.

The National Oceanic and Atmosphere Administration Landsat 4 spacecraft earlier this year photographed what U. S. analysts believe was a test of this new Soviet missile basing mode.

The Soviets have achieved this capability by developing hardware, mounted on the submarine, that breaks through several feet of ice above the submarine just prior to the missile launch. This creates a small patch of relatively open water through which the missiles can be fired.

U. S. analysts believe the Landsat 4 image above, left, shows such an ice-breaking test under way in the East Siberian Sea just north of Wrangel Island. The island is Soviet territory located about 100 mi. north of the Chukotski Peninsula, which makes up the Soviet side of the Bering Strait.

Analysts believe the photo shows both the new submarine ice-breaking capability and Soviet aircraft observing the test. The image was taken last Mar. 28 and was received by the Landsat Quick Look facility operated by the Geophysical Institute of the University of Alaska, Fairbanks.

The view is a section of a Landsat image that has been enhanced and enlarged by a factor of eight creating a scale of 1 in. to 2 mi.

The circular feature (A) is a condensation trail formed by one or more Soviet observation aircraft flying repeatedly around a central location on the ice. Analysis shows that the circle formed by the contrail is 2 mi. in diameter and 3,000-5,000 ft. above the surface. The ice in the center has been broken, while solid ice remains toward the outer edges of the circle. Solid ice covers several square miles of ocean surrounding the test area.

Analysts believe that a submerged Soviet submarine is in the center of the circle and is testing its ice-breaking equipment at that location. The image shows another aircraft contrail (B) exiting the main circle and proceeding about 6 mi. southward, where a second less-defined circular course has been established (C).

A broader view of the area (above, center), obtained by enlarging the original Landsat image by a factor of four, creates a scale of 1 in. to 4 mi.

In this view, the primary observation circle (A), the exit contrail (B) and secondary circle (C) are shown in relation to another Soviet aircraft (D) laying a vapor trail about 25 mi. to the southeast of the primary observation area. The aircraft was flying in a north/south direction.

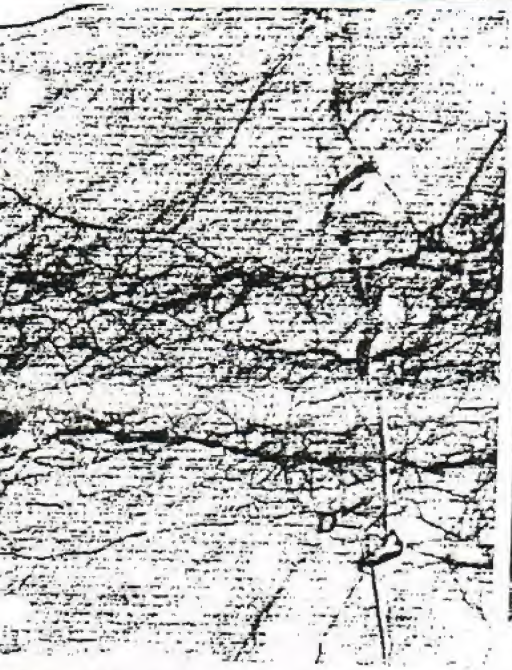
The full Landsat scene (above, right) shows where the primary observation area (A) and north/south contrail (D) are in relation to Wrangel Island (E).

The primary test area is about 50 mi. north of Wrangel. Note the large area of solid ice off the shore of the island. This ice is connected to the terrain along the shore line.

The test area location is shown on the map at right. The coordinates of the test area are 72.5 deg. N. Lat. and 178.5 deg. W. Long. The island is about 60 mi. long.

Soviet ability to fire missiles through the ice is forcing a significant development effort by the Defense Dept.

A key element in countering the Soviet submarine ballistic missile force is the ability to locate the submarines so anti-submarine warfare techniques can be employed to destroy them in wartime. The Soviets earlier had to move their missile-



firing submarines into relatively ice-free waters to fire missiles, and this made them easier to detect, track and counter.

Soviet submarines hidden under the ice cap, however, can escape detection by U. S. Navy surface ships and antisubmarine warfare aircraft. It also would be difficult for U. S. Navy attack submarines beneath the ice to locate and target Soviet submarines that have moved to a position and then stopped to form a relatively undetectable missile-launch platform.

New data indicate that basing Soviet missile firing submarines under the polar ice cap has become a part of the Soviet single integrated operational plan that makes up Soviet nuclear attack strategy.

New Navy initiatives to develop methods of locating Soviet submarines based under the Arctic ice pack include laser techniques and sonar and other systems that could be dropped on the ice to locate Navy submarines under the pack.

The university's Quick Look program provides an alternative source of Landsat data for users who need access to enhanced images within a few hours of the spacecraft's pass over a target area, according to John M. Miller, senior engineer with the Northern Remote Sensing Laboratory portion of the project. □

Tom B.

January 4, 1985

Mr. Tom Harold
PO Box 4328
Huntsville AL 35815

Dear Mr. Harold,

I apologize for the delay in responding to your request for information about arctic phenomena and especially the Bennett Island plumes.

Part of the time we were occupied with another facet of our satellite observations. Enclosed are reprints of news accounts which explain the circular contrails that we had observed.

Now for a brief summary of the plumes that periodically billow from the sea floor near Bennett Island. This is a rocky island covered most of the year with snow and lies oceanward from the USSR's New Siberian islands at 76.7°N, 149.3°E. It is about 40 by 20 km in size. From the geologic and seismic history of the area, it is not a likely candidate for volcanic action, although volcanism there would not be thought impossible.

Since 1974 satellite imagery has shown about 70 cases in which plumes can be noted in the vicinity of the island (see attached list). Even explorers to the area in the mid 1880's described in detail the very dense, persistent, and cold fogs accompanied by deposits of hoarfrost in both summer and winter. The plumes sometimes escape from beneath the ice in the vicinity of Bennett Island or even 100 miles distant. One image shows about a dozen small plumes, but these locations do not seem to be persistent nor representative of plume activity at other times.

The plumes typically are much colder than the surrounding air or clouds, when present, and they do not seem to rise to great heights one would expect for hot gases. No dust or debris is ever seen accumulating on the snow or ice cover in the vicinity of the plumes, as would be expected from volcanism. Air samples taken by aircraft from U.S. air space, but downwind of the plumes, has shown clay particles and aerosols that could be associated with gas seeps, but not with volcanism or nuclear products.

The most plausible explanation involves the undersea production of methane gas. The methane could be derived from coal that underlies the area and also has been observed to outcrop on the island. Similar beds of coal underlie much of the Siberian and Alaskan arctic. The world's largest natural-gas fields are located in northern Siberia, and these plumes may be seeps from this field.

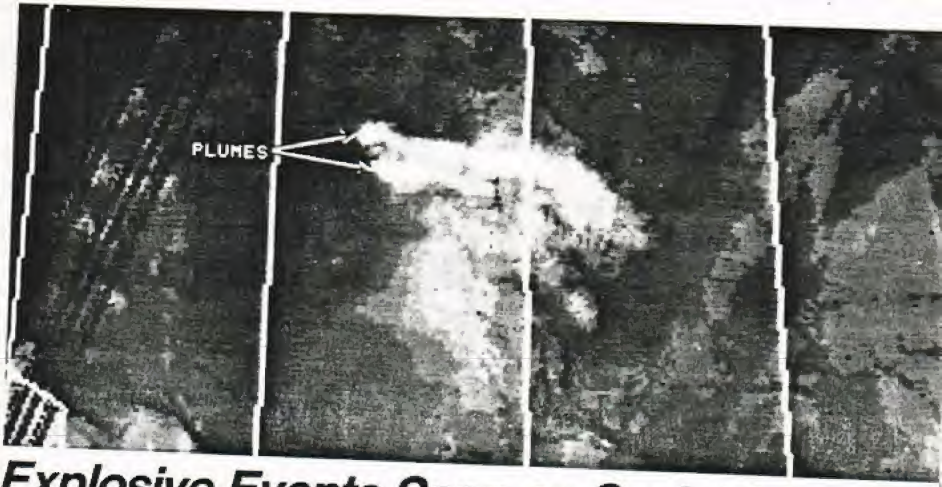
The suggested scenario is that the methane is trapped by a reservoir cap of frozen clay. The permafrost typically is several-hundred feet deep (and up to 1,000 feet thick off Alaska), and under pressure it can react with the methane to produce a clathrate, methane hydrate, a hard solid in which methane is tightly bound with water molecules. When the clathrate breaks down it becomes strongly endothermic (rapidly absorbing surrounding heat) and releases very cold methane gas. Methane is about half as dense as air in the general case, so even a cold column of methane could be expected to rise in the atmosphere, but not to the extent that hot gases would.

The most sensible conclusion is that the plumes represent ejection of compressed gas and are neither volcanic nor man-made. Methane is the most plausible explanation, but certainty would require direct sampling and analysis.

Sincerely,

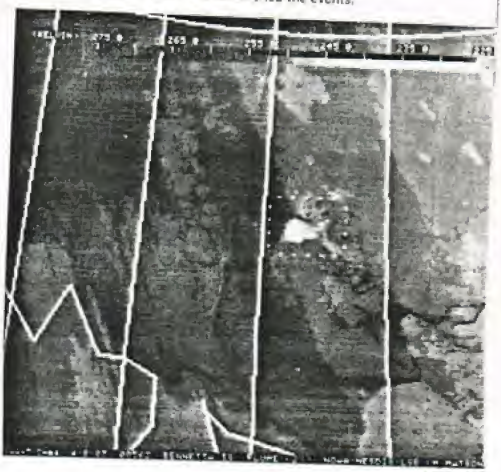
John M. Miller
Senior Engineer

Geophysical Institute, C.T. Elvey Building, University of Alaska, Fairbanks, Alaska 99701
PHONE: 907-479-7282 TELEX: 35414 GEOPH INST SBK



Explosive Events Seen on Soviet Island

Explosive events and massive smoke plumes observed by U.S. spacecraft on a Soviet island in the East Siberian Sea have drawn the interest of both U.S. intelligence analysts and geologists. National Weather Service personnel in Anchorage, Alaska, making a routine examination of NOAA-6 and NOAA-7 weather spacecraft data, discovered the events on Bennett Island located 350 mi. north of the Soviet mainland near the Arctic Circle. The photograph below left, acquired by NOAA-6 on Feb. 18, shows a 155-mi.-long smoke plume rising from the small island. Analysis of the plume found at least three puffs in the smoke trail believed to correspond to explosive events on the island. Photograph above is a NOAA-7 infrared image taken somewhat earlier on Feb. 18, closer to the start of the event, with at least two distinct smoke plumes rising from the area. One of those plumes is rising from an area offshore of the island. Maximum height of the plume Feb. 18 was assessed at 3.8 mi. A similar smoke plume was observed by NOAA-7 on Mar. 11. A third event was imaged by the satellite Apr. 8 (below right). During the Apr. 8 pass, however, NOAA-7 overflew the island just as the activity was starting and photographed a large vertical cloud believed to result from an explosion on the northeast corner of Bennett. The smoke plumes and explosive events appear quite similar to volcanic activity, although geologic research on the area has found volcanic activity at this location would be extremely unusual. As a result of this assessment, U.S. intelligence analysts considered the possibility that Soviet weapons or other human activity on the island caused the large explosive smoke plume events observed at least three times over the last year. The intelligence assessments turned up no evidence of Soviet activity such as a chemical burn that could cause the events. Cause remains unexplained, but a volcanic source is considered the most likely. The National Oceanic and Atmospheric Administration's National Environmental Satellite Data and Information Service and geologists supported by Alaskan State funds have researched the events.



BENNETT ISLAND PLUME CASES RECENTLY FOUND

DATE	SATELLITE	ORBIT	TIME (GMD)	CHANNEL	GENERAL DIRECTION OF PLUM
17 Mar 73			0231		
22 Nov 74	N3	4716	0455	4	to NE
22Nov 74	N3	4725	2230	4	to NW
23 Nov 74	N3	4728	0411	4	to N
21 Dec 74	N2	444	0347	IR	to E
3 Feb 75	N3	1005	2306	IR	to NNW
24 Feb 75	N3	1250	0358	IR	to ESE
24 Dec 75	N4	0357	0357	IR	to NW
31 Dec 75	N3	9721	0102	IR	to NW
31 Dec 75	N4	5140	0437	IR	to NW
29 Mar 76	N4	6254	0350	IR	to NE
2 Dec 76	N5	1553	0352	IR	to NNW
3 Feb 77	N5	2333	0413	IR	to ESE
31 Mar 77	N5	3026	0355	IR	to NW
15 Apr 77	N5	3213	0629	IR	to NE
16 Apr 77	N5	3224	0350	IR	to N
10 Feb 78	N5	6938	0502	IR	to NNW
11 Mar 78	N5	7297	0506	IR	to NW
7 Apr 78	N5	7631	0443	IR	to W
9 Dec 78	N5	10676	0446	IR	to NW
25 Dec 78	N5	10874	0441	IR	to NNW
11 Mar 79	TN	2095	0042	IR	to NW
3 Jan 80	TN	6299	0135	IR	to NW
15 Jan 80	TN	6468	0104	IR	to SE
5 Apr 80	N6	4026	2051	IR	to NNW

7 Apr 80	N6	4046	0629	IR	to N
2 Dec 80	N6	7444	0519	IR	to S
3 Dec 80	N6	7458	0456	IR	to E
3 Dec 80	N6	7459	0637	IR	to E
1 Jan 81	N6	7871	0550	IR	to N
16 Mar 81	N6	8933	2153	VIS & IR	to NNW
25 Mar 81	N6	9061	2151	VIS & IR	to E
1 Apr 81	N6	9151	0534	IR	to NW
30 Nov 81	N7	2262	1 .9	IR	to SE
1 Dec 81	N6	12622	0413	IR	to SE
1 Dec 81	N6	12623(AF)	0555	IR	to ESE
2 Dec 81	N7	2290	1656	IR	to E
2 Dec 81	N6	12695(AF)	2058	IR	to ESE
11 Mar 82	N6	20046(AF)	0536	4	to NW
18 Mar 82	N7	3777	0057	4	to SE
18 Feb 83	N7	8535	0047	IR	to ENE
18 Feb 83	N6	18943	0617	IR	to E
8 Apr 83	N7	9227	0055	IR	to E
10 Sep 83	N7	11416	0118	VIS & IR	to SSE
25 Nov 83	N7	12499	1800	IR	to NW
25 Nov 83	N8	3444	2221	IR	to WNW
26 Nov 83	N8	3448	0500	IR	to NW
26 Nov 83	N7	12513	1748	IR	to NW
26 Nov 83	N8	3458	2159	IR	to N
5 Dec 83	N8	3586	2205	IR	to NW
25 Jan 84	N8	4301	0507	IR	to E
29 Mar 84	N7	14255	0212	IR	to NW
27 Apr 84	N7	14664	0117	IR & VIS	to SE